In this page, the author discusses various foot fractures and their characteristics. The content is presented in a visually rich format with diagrams illustrating the anatomy and mechanics of the foot joints. Specific topics include:

- **Famous Foot Fractures**: A section introduces famous foot fractures and their associated anatomical terms.
- **Ankle Joint**: The ankle joint is described as a mortise and tenon joint, highlighting its role in foot function and stability.
- **Range of Motion**: The text explains the range of motion in the ankle joint, which is essential for understanding foot mechanics.
- **Lisfranc Fractures**: These fractures are discussed in detail, including their incidence and importance.
- **Jones Fractures**: Jones fractures are also covered, providing insights into their diagnosis and treatment.

The page is rich with illustrations and diagrams that help illustrate the concepts discussed. The text is accompanied by references to other medical literature, enhancing the educational value of the page.
Famous Foot Fractures

Weber, Lisfranc, & Jones

page 3 of 12

Famous Foot Fractures

AO Classification

Ankle Fx Classification: Weber A

Ankle Fx Classification: Weber B

Ankle Fx Classification: Weber C

Ankle Fx Classification: Weber AO

Based upon level of Fibula Fracture

A: Infra-s Syndesmotic

Due to talus Inversion → Avulsion Fx

B: Trans-s Syndesmotic

Due to talus Eversion → Compression Fx

C: Supra-s Syndesmotic

Due to talus Eversion → Compression Fx

©Ken L Schreibman, PhD/MD 12/2/15 www.schreibman.info
Syndesmotic screw

Metatarsal fracture is on the Lateral, Metatarsal fracture is on the Lateral, (Infra Syndes lig. (Trans Metatarsal  6 months later

Mortise Post the fx?

Mortise view

Lateral view

T, S 61yo M

Swelling… Soft

Lateral

Need both AP & Mortise Views

Fibula Metaphysis Compression Fracture

Fibula Metaphysis Compression Fracture

Sometimes the best view of the Fibula fracture is on the Lateral, through the Tibia

OK for syndesmotic screws to loosen

Syndesmotic Screw is Unique

Hardware

1) Fibular Plate
2) MM Screwwire

Rigid fixation

Solid bony union

Syndesmotic screw

Stabilize Tib/Fib jt.

Allow torn Tib/Fib lig. to form scar tissue.

There’s not much difference between syndesmotic fusion.

Don’t want bony union.

Expect print to move.

Expect screw move.

©Ken L Schreibman, PhD/MD 12/2/15  www.schreibman.info
Famous Foot Fractures
Weber, Lisfranc, & Jones

Radiographs well show TMT Joint

How we shoot AP/Obl Foot Radiographs
Standing AP shows alignment medial 2nd TMT
Standing Obl shows alignment lateral 5th TMT

How we shoot Lateral Foot Radiographs
Shooting standing lateral foot presents a challenge
X-ray tube can’t be lowered all the way down to the floor
Patient stands on raised two step platform
X-ray cassette sandwiched between the feet
Horizontal X-ray beam

Can always tell if standing...
1) Technologist should indicate this on the image
   With text, or an Up arrow
2) On lateral, can see the step the patient is standing on
   Sometimes can even see the screws holding steps together

Foot Radiographs SHOULD be Standing
If patient walked into the clinic, can stand for foot radiographs
Lisfranc Fracture/Dislocations can be subtle!

- One Pattern: Homolateral
  - All 5 MTs dislocate laterally as a unit
- Another Pattern: Divergent
  - MTs 2-5 dislocate laterally as a unit, divergent from MT1

Recent Lisfranc Fracture Classification

- Classification, Investigation, and Management of Midfoot Sprains
- Lateral Injuries in the Athlete
- Nonathletic Lisfranc injuries
  - Result of high velocity force (MVC)
- Athletic Lisfranc injuries
  - Result of low-velocity indirect force

Diastasis between MT1-MT2
- Weightbearing radiographs
- Comparison with normal side

Stage 1
- Lisfranc ligament sprain
- No diastasis

Stages 2 & 3
- Lisfranc ligament rupture
- 2-3mm diastasis
- 3-5mm diastasis
Famous Foot Fractures
Weber, Lisfranc, & Jones

5th MT: Fractures

- 5th MT is most commonly fractured metatarsal
- 5th MT Fxs account for 2/3 all MT Fxs
- Proximal Fracture Zones
  - 3 Fx: Prox Metaphysis
  - 1 Fx: Base
- 5th MT Fxs may be bipartite

5th MT: Base

- Peroneal Brevis
- Under Fibula
- Plantar Fascia
- Lateral Band
- Not Peroneal Longus
- Under Fibula (with PB)
- Peroneal Sulcus
- Inserts base 1st T-MT
- 3 Proximal Fracture Zones
- Base

5th MT: Prox Metaphysis = Jones

- Acute Injury
- Forefoot adduction
- Tension of 5th MT - lateral cortex
- Fx: Metatars-Diaphysis Junction
- Transversely oriented
- Extra-Articular
- Poor, delayed healing
- Jones Fx: 43 young athletes (16-22yo)
- Half required surgery to achieve union
- The rest achieved union only after 7-15m immobilization
- Poor healing due to relative hypovascularity of proximal metaphysis 5th MT

5th MT Fxs: Lateral Ankle Pain

- Patients with 5th MT fractures may complain of "Lateral Ankle Pain" rather than "5th MT Pain"
- Of course pt will be tender to palpation at 5th MT
- PCPs should ALWAYS examine pt before imaging
- Techs: Need to include 5th MT on ankle radiographs!
- Patient twisted ankle, lateral ankle pain, She called PCP, who called in request
- I saw no ankle fracture, but because my technologist included 5th MT
- Did x-ray the foot before imaging
- I called PCP"
Famous Foot Fractures

Weber, Lisfranc, & Jones

5th MT Fxs: Lateral Ankle Pain

Famous Foot Fractures

Jones Fxs: Delayed Healing (7-15m)

Famous Foot Fractures

Jones Fxs: Screw Fixation

Famous Foot Fractures

Jones Fxs: Need All 3 Foot Views

Famous Foot Fractures

Goal

Objectives

Anatomic Divisions

Anatomic Alignment

Metatarsal Joint

Tarsal Metatarsal Joint

Midfoot (blue-green)

Talar Calcaneal

Foot (white)

5 Metatarsals

Phalanges

MR(CT) of the "Foot" covers

Midfoot → Forefoot

MR(CT) of the "Ankle" covers

Hindfoot → Midfoot

I suggest consult radiologist

before ordering both!

I INSIST you get radiographs

before ordering any CT/MR!

©Ken L Schreibman, PhD/MD 12/2/15  www.schreibman.info
Famous Foot Fractures
Weber, Lisfranc, & Jones

Sir Robert Jones: Father of Orthopedic Surgery?

Orthopaedic from Greek

- ortho ✓ straight, correct
- pedo ✓ child
“to straighten children”

Hugh Owen Thomas: Father of Orthopedic Surgery

Son of famous Liverpool bonesetter

- 1834: Dickers “A Christmas Carol”
- 1846: Ether used for surgical anesthesia
- 1867: Lister introduces antiseptic surgical techniques
- Late 1880s: Aseptic surgical techniques employed
  - Surgery becomes popular to treat infected joints
  - Early excision of the joint
  - Limb amputation
- Tuberculosis largely a disease of the poor
  - Children largely a disease of joints (No, spine)
  - It was particularly the working class children who underwent this type of aggressive surgery
- The wealthy instead got long-term convalescence

Sir Robert Jones: Favorite son of Rhyl, Wales

- age 5 (1862): Jones family moved to London
- age 16 (1873): Robert moved to Liverpool with Uncle Hugh Owen Thomas
- age 21 (1878): Apprenticed with HO Thomas

Hugh Owen Thomas: Champion of the Poor

- Had his own shop to make customized braces
- It was particularly the working class children who underwent this type of aggressive surgery
- The wealthy instead got long-term convalescence

©Ken L Schreibman, PhD/MD
12/2/15 www.schreibman.info
Famous Foot Fractures
Weber, Lisfranc, & Jones

Hugh Owen Thomas: Champion of fresh air

Thomas hated these crippling operations, instead he prescribed immobilization & rest. “Enforced, uninterrupted and prolonged…”

Sir Robert Jones: Disciple of Hugh Owen Thomas

Sad, and largely for reasons of his own making, Thomas’s principles were not widely accepted by the medical profession during his lifetime.

Hugh Owen Thomas: The cripple’s champion

Annals of Surgery Vol. XXXV, No. 6, 1902 p.697-700

Sir Robert Jones: Radiology Pioneer

1895: Röntgen “A new type of radiation”
1896: Jones “The discovery of a bullet lost in wrist by means of Roentgen rays”

Revolutionized wounded soldier care at the battlefront

Use of Thomas splint for femur fractures
Reduced open femur fracture mortality from 87% to less than 8%*

1894: Joined Volunteers as Medical Officer to Red Cross
1916 (age 58): Appointed Inspector of Military Orthopaedic
1917: Knighted

Annals of Surgery Vol. XXXV, No. 6, 1902 p.697-700
FRACTURE OF THE BASE OF THE FIFTH METATARSAL BONE BY INDIRECT VIOLENCE. BY ROBERT JONES, F.R.C.S.

ThomasSplint, Broussey, France, 1918

1895: Röntgen “A new type of radiation”
1896: Jones “The discovery of a bullet lost in wrist by means of Roentgen rays”
First published clinical use of x-rays
1896: Jones fractures his foot

Annals of Surgery Vol. XXXV, No. 6, 1902 p.697-700
FRACTURE OF THE BASE OF THE FIFTH METATARSAL BONE BY INDIRECT VIOLENCE. BY ROBERT JONES, F.R.C.S.

©Ken L Schreibman, PhD/MD  12/2/15  www.schreibman.info
Sir Robert Jones: “whilst dancing”

Example of the high spirits of the Volunteer movement. “In camp in 1896 we were all dancing in a circle round the tentpole singing ‘Solomon Levi’,” (p697).

Sir Robert Jones: The Jones Fracture

Case 1. 54yoM Physician had an outer side of foot dancing whilst walking.

Case 2. 30yoM Inverted foot sleeping on stone whilst fishing.

Case 3. 56yoM Inverted foot walking up plank.

Case 4. 57yoM Inverted foot walking up stone.

Sir Robert Jones: Radiology Champion

“Radiography here, as in all branches of medicine, is an essential aid to diagnosis. No matter how experienced we may be, we cannot afford to dispense with it, even in the apparently simple and obvious case. Not only should we insist upon procuring a film, but it is equally important that we should welcome the radiologist’s reading of it. Some surgeons resent this and say, ‘Give me the film so that I can read it myself; …but this is an arrogant and stupid attitude, and not the patient’s advantage.’

Sir Robert Jones: Champion of Crippled Children

“The care of crippled children is not a branch of surgery, but it is the care of humanity.”

Sir Robert Jones: Inspiration

Scientific thinker, inventive craftsman, teacher, leader of men, he gave himself and through his disciples great service to mankind. For him the thread of life was ‘stung with the beads of thought and love’.

The shining lustre of his name is an abiding glory of British Surgery; but it is the man himself whom his fellow countrymen will wish to hold in remembrance.

Any Questions?

www.schreibman.info